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ABSTRACT

The National Education Commission on Time and Learning (NECT&L) is authorized by Public Law 102-62, the Education Council Act of 1991. The general focus of the study is an examination of the quality and adequacy of study and learning time of elementary and secondary students in the United States. This document summarizes the first hearing of the NECT&L which focused on issues in extending the school year. The proceedings of three panel discussions and their question-and-answer sessions are highlighted. Participants in the first panel discussion included: (1) James Dyke, Secretary of Education, Commonwealth of Virginia; and (2) Gordon Ambach, Executive Director, Council of Chief State School Officers. Discussants in the second session included: (1) R. S. Archibald, President, National Association for Year-Round Education and Superintendent of Schools, Marion County, Florida; (2) Bruce Walborn, International Association of Amusement Parks and Attractions; (3) Lillian Brinkley, President, National Association of Elementary School Principals; and (4) R. David Hall, President and Ward 2 Representative of the District of Columbia School Board. The third panel discussion involved the following guests: (1) Harold Stevenson, Professor of Developmental Psychology, University of Michigan; (2) Jeanne Griffith, Associate Commissioner for Data Development, National Center for Education Statistics; and (3) Nancy Mead, Director, International Assessment of Educational Progress, Educational Testing Service. (LMI)

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ED 372 483

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SUMMARY OF THE FIRST HEARING OF THE NATIONAL EDUCATION COMMISSION ON TIME AND LEARNING

June 26, 1992

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PREFACE

The National Education Commission on Time and Learning (NECT&L) is authorized by P.L. 102-62, the Education Council Act of 1991. The Commission began its work in April 1992 and will submit a final report to the Congress and the Secretary of Education in 1994. The Commission is holding hearings throughout the country to receive the views of the public, community groups, education professionals, interested individuals, and national associations. While examining the quality and adequacy of study and learning time of elementary and secondary students in the United States, some issues to be considered are:

- the length of the academic day and the academic year in elementary and secondary schools throughout the United States and in schools of other nations;
- the time children spend in school learning academic subjects such as English, mathematics, science, history, and geography;
- the use of incentives for students to increase their educational achievement in available instruction time;
- how children spend their time outside school with particular attention to how much of that time can be considered "learning time" and how out-of-school activities affect intellectual development;
- the time children spend on homework, how much of that time is spent on academic subjects, the importance that parents and teachers attach to homework, and the extent to which homework contributes to student learning;
- year-round professional opportunities for teachers and how teachers can use their time to acquire knowledge and skills that will permit them to improve their performance and help raise the status of the profession;
- how school facilities are used for extended learning programs;
- the appropriate number of hours per day and days per year of instruction for United States public elementary and secondary schools;
- if appropriate, a model plan for adopting a longer academic day and academic year for use by United States elementary and secondary schools by the end of this decade, including recommendations regarding mechanisms to assist States, school districts, schools, and

parents in making the transition from the current academic day and year to an academic day and year of a longer duration;

- suggestions for such changes in laws and regulation as may be required to facilitate States, school districts, and schools in adopting longer academic days and years; and

- an analysis and estimate of the additional costs, including the cost of increased teacher compensation, to States and local school districts if longer academic days and years are adopted.

The Commission is made up of nine members, the Secretary of Education, the House of Representatives, and the Senate each having appointed three. John Hodge Jones, superintendent of schools in Murfreesboro, Tennessee, chairs the Commission. Carol Schwartz is vice-chair. She has served on the District of Columbia School Board and City Council. The other Commission members are:

Michael J. Barrett, State Senator, Massachusetts,

Marie Byers, past president of the Maryland Association of Boards of Education,

Christopher T. Cross, executive director of the Education Initiative of the Business Roundtable,

Dennis P. Doyle, senior fellow at the Hudson Institute,

Norman E. Higgins, principal of Piscataquis Community High School, Guilford, Maine,

Dr. William E. Shelton, president of Eastern Michigan University in Ypsilanti, Michigan, and

Glenn R. Walker, principal of Clifton-Clyde High School in Concordia, Kansas.

The Executive Director of the Commission is Dr. Milton Goldberg, the past director of the Office of Research, U.S. Department of Education. Julia Anderson, formerly with the National Council on Vocational Education, is the Commission's deputy executive director and Emma Jordan serves as the staff assistant.

INTRODUCTION

This is a summary of the first hearing of the National Education Commission on Time and Learning. The hearing was held on June 26, 1992, in room 628 of the Senate Dirksen Building in Washington, D.C. The verbatim texts of the written and oral presentations can be obtained by writing to Julia Anderson, Deputy Executive Director, NECT&L, 1255 22nd Street, N.W., Suite 502, Washington, D.C. 20037-7591.

The material presented in this summary is not a substitute for comprehensive written documents and oral discussions. It is a synopsis to aid the Commissioners, interested individuals, and associations.

Diane N. Beers
August 17, 1992

OPENING REMARKS

Dr. John Hodge Jones, chairman of NECT&L, opened the first hearing by expressing appreciation for Senator Jeff Bingaman's presence and the fact that the Senator sponsored legislation for this study. The chairman thinks the Commission will do significant work that will impact American education in the twenty-first century. He also had words of praise for the Commission membership, which includes representatives of middle America and reform-minded practitioners.

Senator Jeff Bingaman, New Mexico, explained how his idea of establishing the Commission evolved from the report, "A Nation at Risk." There continues to be a lack of consensus about the need for a longer school year. The Senator has been unable to obtain reliable data on the amount of quality instruction time our students are receiving in the basic core subjects. Senator Bingaman questions the fairness of subjecting our students to international testing and comparing them to foreign students year after year if, in fact, our fourth graders are getting fewer hours of instruction on math than fourth graders in other countries.

If the Commission concludes that more quality instruction time is needed, or that there is a relationship between quality instructional time in the core subjects and the increasing demands being placed upon our schools, the Senator wants the Commissioners to present suggestions for improvement to the federal government. These suggestions must of course take into consideration our tradition of state and local control of education.

Senator Bingaman asked the Commissioners to consider the federal government's role in providing incentives for states to lengthen the number of days and number of hours for instruction, and whether or not the federal government should provide assistance to states for implementing suggested increases. The Senator is looking forward to receiving good, hard-hitting recommendations from the Commission. He will do his best to implement them.

FIRST PANEL DISCUSSION

Mr. James Dyke, Secretary of Education, Commonwealth of Virginia and Mr. Gordon Ambach, Executive Director, Council of Chief State School Officers.

Mr. Dyke believes there must be a significant increase in the amount and quality of time spent by our students on studying and learning. He stressed the need for establishing an accurate outcome-oriented method of assessing how well our students are

learning what they need to know in order to be competitive and meet world class standards.

The extended school year is supported by Virginia Governor L. Douglas Wilder. The Governor hopes the Commonwealth will extend the 180 day school year to 200 days by the year 2000. Mr. Dyke urged the Commission to support and incorporate an extended school year into the national education agenda, together with changes in the way time is currently used in the school year. He wants educational time to be put to more productive use. Mr. Dyke advocates a pilot approach which would allow several states to experiment with the extended school year while the education community monitored their success. Such experimentation would allow consideration of various logistical problems associated with extending the school year including utilization of instructional personnel, use and renovation of facilities, scheduling problems, and budgetary implications. Buena Vista, Virginia, has had a voluntary year-round school program since the early 1970's, and Mr. Dyke noted the success of the school and the high level of achievement students have experienced there.

Mr. Dyke's proposal for an extended school year does not call for 12 months of school, but for pilots on different ways to extend the school year. He encouraged the Commission and federal government to work with the states and localities to experiment with a number of creative approaches. Mr. Dyke hopes NECT&L will also consider how school facilities can be used on an extended basis, after the regular school day and year end, to provide developmental, enhancement, recreational, and other experiences for students.

Mr. Dyke ended his presentation by stressing the need for "radical steps" to be taken so that our students are in a position to learn more, to learn it in different ways, and to be able to meet international competition. This means demanding more from our students, parents, educators, and the community.

Mr. Gordon Ambach, Executive Director, Council of Chief State School Officers.

Mr. Ambach's views did not represent official positions of the Council of Chief State School Officers. The Council has not taken an official position on the number of school days in the year nor the exact length of the school year. He sees the issue not as a question of whether there is a desirability of expanding or extending the opportunities for children to learn, but as a practical matter of how it is done.

Ambach's three specific recommendations for NECT&L's final report in 1994 are:

(1) Separate the time schools should be open for services from the issue of the time individual students are engaged in specific learning. This is necessary because of the "increased reliance upon our schools as central to neighborhood and community and family services...." Schools should be open from 6:00 a.m. until 10:00 p.m. for 288-plus days a year from Monday through Friday and part of Saturday. The 288 school day is an opportunity to use facilities not only for learning and studying, but also for the provision of meals, child care, linkages to health services, recreation, and the sports and extracurricular activities which have been disappearing from schools across the country.

(2) Focus on matching the requirements or provisions of time to achieve new goals and expectations for student performance. Ambach would like the Commission to think "...in terms of results of student performance and match recommendations to those, rather than just specific recipes for numbers of days or times in class." A sense of norms (i.e., the amount of time it usually takes to master things) is required.

(3) Concentrate your recommendations for extended time for learning on proposals for summer session study, rather than stretching existent school years from 180 or 185 to 200 or 200 plus days. The expanded opportunities would be compulsory for students not meeting expectations in the regular school year schedule and voluntary for those wishing to accelerate their learning or take advantage of learning in areas that might not be part of a regular course or requirement.

This approach would help to overcome the problem of student learning loss. Students would also have an incentive to achieve higher productivity during the regular year. Faculty wishing to participate in the summer sessions would increase their earnings. It would also provide them an opportunity for professional development, curriculum development, experimentation, and demonstration--all necessary for restructuring our schools.

FIRST PANEL QUESTION AND ANSWER PERIOD

Mr. Walker asked how small school districts would be able to finance the expanded summer program. He used the example of an outstanding biology teacher spending two weeks of a summer in the classroom talking about pond biology, and then setting up by a pond (with microscopes) and doing pond biology for one week. Walker thought this arrangement would be fine in a voluntary program with 20-30 students, but he wanted to know how such biology enrichment fit into schools with 45 students in the

entire high school. He explained that such small schools exist in Nebraska and Kansas.

Mr. Ambach responded that such schools probably have the same problem during the regular school year. Small school districts or schools always have the problem of providing specialized subjects. He suggested pooling resources during the course of the summer, instead of each school district having a separate summer program, and providing transportation. He also suggested providing flexibility in the summer period for schools to work with various forms of distance learning: "Depending upon how rapidly certain aspects of technology and downlinks and satellite connections work, the notion of having field studies along with those, seems to me, provides extremely inviting opportunities."

Ms. Byers asked Mr. Dyke and Mr. Ambach for their thoughts on establishing world standards in the core subjects.

Mr. Dyke said the state of Virginia has launched a world class education initiative which includes a core curriculum that will be available to all students, whether college bound or work bound. Currently Virginia is examining how to establish world class standards and teach core subjects in a more exciting and interesting fashion. In science and math a systematic change is taking place: the principles of math and science are being applied to real life problems. Mr. Dyke believes it is necessary to teach the core curriculum in a way that excites children early enough to get them interested in math and science. Doing so would get more women and minorities interested in these subjects at a time when we are going to need more people in these areas.

In addition to developing a core curriculum and setting standards, Virginia wants to have an outcome-based way of assessing whether or not the students are learning what they ought to learn. Mr. Dyke stressed the need for an outcome-driven assessment system so it is known whether or not students are learning. Virginia's model should be followed at the national level.

Mr. Ambach said, "On the matter of standards, our Council has for some time taken a very strong position to the effect of support for the development of national voluntary standards for education and for the states." His organization advocates the establishment of voluntary national standards systems of assessment, and examinations which are related to those standards. The standards could be used by the states and localities at their determination.

Dr. Shelton asked Dyke and Ambach to define the role of schools in America and in American society. He also asked for an explanation of outcome-based measurements.

Mr. Dyke thinks it is necessary to go beyond meeting the competition with respect to test scores. Education is a matter of developing life skills, the ability to make decisions, to analyze situations, and to apply what is learned to real life. Working with the business community to find out what kinds of skills are needed helps to develop a curriculum that teaches skills the work place demands. Life skills also include appreciating art and understanding how it impacts on our ability to understand not only ourselves, but other nations.

The role of the school is not only to help educate kids, but also to make sure young people are healthy, well-fed, and so on. The school should at least be coordinating its work with other sectors of the community to ensure that the young have every opportunity to receive and benefit from a world class education. The community can help measure whether or not the students are learning what they ought to learn in order to be productive.

Mr. Ambach stated that when trying to determine how much time should be spent in reaching objectives, one clearly needs to begin with a sense of what objectives one is attempting to reach. This issue could pose problems for the Commission. Ambach suggested that the Commission make some assumptions about the purposes of schools and base recommendations upon those assumptions. The current development of voluntary national standards in the core curriculum areas will parallel the work of NECT&L and could provide guidance. Questions of character, citizenship, and civic responsibility, of course, are more difficult.

Mr. Dennis Doyle asked for the panel's views concerning the general issue of how to measure output and associated costs. When there is talk about extending the day and year, the public immediately conjures up the vision of more of the same at a much higher cost. Doyle also focused on the possibility of establishing a summer program rather than pull-out programs during the year. "It might be three weeks, or four weeks, or five weeks, or might be introductory, prefactory, could be between first and second grade, however you want to think about structuring it." Also, Doyle wanted to know if existing funds could be targeted to pilot programs.

Mr. Dyke noted that in Buena Vista, remedial money is being used to try to do these things in the summer. He said "...it does not do us any good to talk about extending the school year if we are only going to talk about doing exactly what we are doing now only doing it longer." He thinks it is premature to put a price tag on it since they may decide to use their current funds differently.

Mr. Ambach said Chapter 1 money can be used for summer programs. Expansion of this option should be considered as

reauthorization proceeds on Chapter 1 in 1993. According to Ambach, "...the more troublesome problem by way of building out the summer programs is where is the real burden for the cost going to rest." He told the Commission the burden in most states would fall on the local school district. Ambach thinks a federal role in the provision of incentives to schools to establish summer sessions is critical.

Regarding output measurement and costs, Ambach suggests adopting bold and radical approaches. As an example, he recounted his suggestion for the state of New York to shift the focus of schooling from age four to age sixteen. It was not a popular suggestion and never came to pass, but people did start thinking about the effective use of 11th and 12th grades.

Ambach thinks the Commissioners should examine some challenging alternatives and substantially alternative propositions. These could be included in an appendix.

Norman Higgins asked Mr. Dyke and Mr. Ambach to consider the issue of time allocation in the buildings of our communities. He wanted opinions and perspectives about engaging parents, teachers, and principals. The community could be empowered to break the bureaucratic stranglehold on decision-making about time allocation and accountability.

Mr. Dyke referred to the discussions in education about site-based decision-making. He said it is necessary to set state goals, but that localities had to have the freedom to figure out how to achieve these goals. Parents and business leaders should be invited to participate in the process.

According to Mr. Ambach, much of the gridlock regarding scheduling issues stems from the fact that schools serve a custodial function as well as an educational function. A lot of scheduling serves to accommodate the liability and responsibilities of educational institutions. It should be possible to build more spaces into the day. Children can perhaps take care of themselves during large parts of the day (studying, doing their work, and learning their responsibilities) while other activities go forward in the schools.

Mr. Dyke hopes the Commission will follow Ambach's suggestion and not be afraid to take bold steps. He thinks "radical" moves are necessary because we will not achieve our goals by dancing around the edges of the educational system. "We need some radical changes, we need some revolution." He cautioned, "...we have to be prepared to take the criticism, but we have to keep in mind that the first priority ought to be what is in the best interests of the students."

SECOND PANEL DISCUSSION

Mr. R.S. Archibald, President, National Association for Year-Round Education and Superintendent of Schools, Marion County, Florida.

Mr. Archibald thought some definitions were required. He began by explaining "multi-track schools"--schools that operate on a traditional school day and school year, but are organized to increase the capacity of the school anywhere from 20 to 50 percent. These schools represent the majority of Mr. Archibald's constituency throughout the country. This type of year-round education is frequently driven by the need to increase the capacity of schools in an era of short capital dollars.

An explanation of "single-track schools" followed. Single-track schools rearrange or reorganize the traditional 180 day calendar with a three month summer break. The reorganized calendar alternates periods of schooling and breaks, with the breaks occurring at equal intervals throughout the year. One possibility would be 45 days in school, with a 15 day break, followed by another 45 days. This schedule would be observed throughout the year until the 180 days of instruction are carried out. The purpose of single-track schools is to improve student achievement.

Sometimes the concept of intersessions is used in conjunction with single-track and multi-track schools. Intersessions are similar to summer schools, but the traditional 20-30 days of summer school are reallocated during the year during the periods of time when students are typically out of school.

There are several benefits to modifying the present traditional calendar. The multi-track calendar can increase school capacity in a tight financial situation by avoiding double sessions and use of intersessions. The elimination of the 3 months of summer break reduces learning loss. Modifying the traditional calendar presents logical steps towards lengthening the school year. Some school districts are using the traditional summer school to offer instruction during the breaks scattered equally throughout the calendar year and effectively extending the school year for at-risk students.

NAYRE supports the reorganized and extended school year because they are forms of year-round education that can lead to improving student performance. There is also evidence showing a reduction in teacher stress and improved pupil attendance. The public schools in Buena Vista, Virginia, have documented positive results in terms of student achievement and the extended school year. Archibald encouraged the Commission to look at the achievement results in the Oxnard school district (California),

which has a long tradition of year-round schools. He believes the Commission should look at test data and the progress of the student as a whole.

Year-round education allows school districts to address the issue of increasingly high student mobility. Also, year-round education, when viewed along with the emerging technological support systems, should make it possible to replace the lock step grade level placement mode and the Carnegie unit with a continuous progress mode.

Mr. Archibald concluded by telling the Commission to be aware of parent and family concerns about child care, family vacations, extracurricular activities, and breaks with tradition. He also believes the Commission should recommend that school districts throughout the nation devote themselves to ensuring more student time on task, extending the school year, and supporting the initiatives of school districts and states that are moving towards year-round education.

Mr. Bruce Walborn, International Association of Amusement Parks and Attractions

Mr. Walborn noted that although IAAPA's 3,500 members include well-known amusement parks such as Disney World, 90 percent of the association's members are small family-owned businesses. Amusement parks are valued community partners and a significant tax resource. They employ many young people, especially in the summer; in fact, thousands of young people often have their first work experience at amusement parks. They learn discipline and good habits, and some of them earn money to further their education or assist the family. Mr. Walborn believes an additional 40 days in the school calendar would eliminate two-thirds of a park's key operating season and be responsible for "ruining our business and devastating the industry."

IAAPA has been collecting information on the longer school year. Walborn believes the available research shows that merely adding school days to the calendar does not guarantee better education or higher academic scores. It is Walborn's position that the research "consistently shows little evidence that an extended school year improves education." After citing various researchers and articles, Walborn stressed that the educators and the institutions that have studied the effects of time on learning agreed that time on task and the quality of time actually spent learning are much more important than adding days to the calendar. Walborn also believes the cost of adding days is "astounding." The figure of $1 billion per additional day was cited.

Mr. Walborn feels it is an error to constantly compare American students to Japanese students and the longer Japanese school year (which is becoming shorter). The "real differences" between the Japanese and American educational systems are what is responsible for the achievement of Japanese students. In Japan, priority is given to education by parents, students, and society. Walborn also referred to the national curriculum in Japan, and to the homogeneous student population.

In closing, Mr. Walborn said the longer school year has little real public support, and the public has not allocated dollars for it. "Although Americans spend more money on education per child than many other countries, our education system is lacking. When teachers need a pay raise, we don't have the money. When classes need fewer students per teacher, we have no money." He questions if we can afford $40 billion a year for a reform that may not improve education.

Ms. Lillian Brinkley, President, National Association of Elementary School Principals

Ms. Brinkley began by saying that her organization supports extending the school day and the school year in our nation's elementary and middle schools. NAESP has 26,000 members and represents educational leaders who have an intimate stake in the relationship between time and learning. She told the Commissioners that they must help break the lock step philosophy that Horace Mann created many years ago for administrative convenience.

Ms. Brinkley addressed three questions:

(1) Is there enough time for effective teaching and learning of academic subjects?

(2) How can the school day and school year be structured to maximize teaching and learning?

(3) Should the school day and year be lengthened?

The time issue is key because many of the tasks that were once the responsibilities of parents are now assumed by the schools. Schools have become responsible for delivering various types of social services to children and their families. This expanding role of the school has an impact on the time available for teaching and learning. In New York, elementary schools are being reorganized to remain open until 10:00 p.m. daily and on weekends. These schools offer breakfast, lunch, dinner, health care, job training, family counseling, parenting courses, and other services.

The time available for basic instruction is also affected by the mandating of everything from fire safety to AIDS education. These mandates are added to an already crowded curriculum of core subjects. Instructional time is sacrificed for the sake of keeping order, performing non-teaching duties (such as bus duty), and doing census reports. Ms. Brinkley's organization believes that deregulating the schools or eliminating some of the burdensome bureaucratic tasks that take time away from instruction can help bolster learning and achievement.

Ms. Brinkley's question on the structuring of the school day and year covered numerous societal and family issues and the academic perspective. She stressed the importance of remembering that children learn at different rates and forget at different rates.. The long summer of forgetting would be avoided if student vacations from the classrooms were reorganized into shorter breaks during a longer school year. At-risk children and students from non-English speaking families might benefit the most from a continuous learning experience. A year-round school system would also eliminate the need to spend the first few weeks of reviewing materials from the last school year.

The answer to the third question--"Should the school day and year be lengthened?"--is (in) the affirmative. The school day and year should be lengthened, providing appropriate financial support is available. A 1990 survey showed that 2 out of 3 elementary school principals believed that the traditional school year may be too short, and most of the principals who participated in the survey thought that teachers needed a longer school day for planning and providing extra help to students. A well used longer school day and school year could enhance student learning. No amount of extra time in the school day or year will have an appreciable effect on what children learn unless we improve the quality of the time they spend in school.

Ms. Brinkley also told the Commission that schools must have smaller classes and offer free preschool for all children. She concluded by mentioning the necessity of involving our families and communities in order to make our schools safe.

Mr. R. David Hall, President and Ward Two Representative of the District of Columbia School Board

Mr. Hall explained the current restructuring effort underway in the District of Columbia. The District is undertaking an assessment of learning time and how that time can be expanded and better utilized. Currently, students spend a minimum of 180 days in school each year. An agreement with the teachers' union allows for a maximum of 184 instructional days, and the school year which just concluded consisted of 184 instructional days. Beginning in September, 1992, there will be an increase in the learning time for all students by one-half hour: 15 minutes at

the beginning of the day and 15 minutes at the end of the day. The lunch period will be reduced to 30 minutes for secondary students. This June the board approved an increase in graduation requirements from 21.3 to 23 Carnegie units. The increases are in the areas of science, math, world history, geography, foreign language, art, music, and career and vocational education. Also, 100 hours of community service are now required.

In the past year, 106 elementary, junior, and senior high schools were offered an extended day program of tutorial and enrichment activities. The program was offered for 4 days a week for 20 weeks. Most schools focused on tutoring students who needed additional learning time to master specific skills. Some of the schools offered enrichment activities that included drama productions, art projects, and field trips to local museums and galleries.

It was recommended that homework time for elementary school students range from 15 minutes at the first grade level to 1.5 hours at the fifth and sixth grade level. Junior high school students were expected to spend from 1.5 to 2 hours on homework while senior high students were asked to spend from 2 to 3 hours each evening on homework.

Professional development has also been part of the restructuring plan because merely extending the school day or the school year will not result in improved educational experiences. Strategies to revise the curriculum contents and adopt new methods of instruction have developed. At this point, the D.C. Board of Education has not taken an official position on year-round education, although the Board supports the outcomes which proponents say result from the year-round format. Mr. Hall believes at-risk students and students with limited English would particularly benefit from year-round education in the District. With continuous review enforcement, at-risk students are more likely to learn and retain what they learn. Formal language instruction is best offered on a continuous basis for students with limited English. Three months away from formal instruction is not helpful to students learning a new language. With a full year-round program, these students would continue their language instruction in extra classes during the several short vacations. Year-round education would also improve their confidence and self-esteem.

Mr. Hall briefly spoke about the social ramifications of year-round schooling. Many of the students in his school district are unable to find summer jobs and many families are unable to afford summer camps and special programs. Since there are not enough recreational and enrichment activities available to children during the summer months, too many children and young people have little to do from June to September. They spend too much of this time unsupervised, unemployed, and unoccupied.

Quality learning and enrichment activities could be provided to students during the short vacations scheduled in a year-round program of instruction.

Mr. Hall foresees "resistance" in his school district to year-round education. Most people are reluctant to accept change. In his school district, there have been legal contests with the teachers' unions over whether school can open before or after Labor Day and whether school should be in session on holidays. The Board of Education has prevailed in most of these legal disputes.

Additional factors that would work against year-round schooling in the District include the lack of overcrowding in schools and the lack of expectations for increases in school populations. Also, only 30 percent of the District's schools have air-conditioning. Summer temperatures in the District's schools without air-conditioning reach 100 degrees and above--an unacceptable environment for teaching and learning. There is no money in the budget for providing air-conditioning to these schools.

Since there is no crisis of overcrowding, as in California, it is a challenge to change the "mindset" of the community. In the next few years, the District of Columbia will focus on restructuring efforts and on building the concentration skills of students. Mr. Hall said, "We believe that through expanding the school day and developing the teaching techniques so that learning is more exciting and more challenging for students, and increasing the attention span rather than extending the school year, we can achieve the outcomes which we expect in quality learning."

SECOND PANEL QUESTION AND ANSWER PERIOD

Mr. Higgins began the question and answer period by stressing that the major focus of the Commission is on student learning. He explained that time is only one of the variables that needs consideration. He said the Commission needs to look at how time is used and structured rather than talking about time as being inflexible. Maximizing time that is available, either in terms of the length of the school day or in terms of the school calendar and how it might be configured, is the issue.

Mr. Hall was asked for suggestions on how quality time on task might be addressed as the Commission debates and deliberates. Hall referred to Ms. Brinkley's statement that the average teacher only gets to spend about 2 minutes with a student when there is a student-teacher ratio of 28 to 1. He believes the increased use of technology would give each one of the 28 students the kind of attention that helps them to excel. Programs in the District that have been supported by the Senate

show dramatic increases in learning rates for students when technology is used in a classroom with a 28-to-1 student-teacher ratio.

Mr. Doyle expressed concern about Mr. Walborn's reference to the possible ruin of the amusement park industry if a longer school year is implemented. Doyle directed his attention to an "extraordinarily effective" year-round school, Beacon Day School in Oakland, California. It is a school with a 241 day calendar and a developmentally appropriate curriculum which indicates what it is a child has learned or failed to learn. Students are permitted and encouraged to attend as many days as they and their parents think is appropriate for their intellectual development. For example, a student who is a serious tennis player and on tour is able to attend 210 days a year; it will simply take that student longer to graduate.

Unlike the ordinary school calendar, if a student gets the measles, the student can enter and leave school as his or her intellectual needs dictate, and the school has the resources to adapt to that student's needs. Mr. Doyle asked Mr. Walborn if he would still object to year-round schooling if it took place under such an arrangement. Families would be able to take off a day or two, whatever the normal trip would be, to visit a large regional theme park or a smaller family-owned local amusement park.

Mr. Walborn explained there are some exceptions to the harmful effects of year-round schooling due to regional variations in weather. Disney World in Florida, for instance, operates on a year-round basis and depends on people traveling from all parts of the world. An operation like Disney would be less impacted because it has a permanent staff and is less dependent on seasonal help, but the Disney organization in California has been "hurt" by the extended year-round school. Walborn thinks the "damage" would be very obvious in the rest of the country since it is the young people who work in the parks and are the bulk of the staff.

Mr. Doyle asked if multi-tracking in Los Angeles would have "rationalized" both the youth employment market and attendance patterns. Walborn responded that the summertime period is the peak time. It is a bell curve situation, whether in California or in Ohio.

Dr. Shelton asked Mr. Hall and Ms. Brinkley about the political realities of trying to make significant changes in how education is delivered, especially in terms of funding services and the primary deliverers (teachers and the organizations representing those teachers). Mr. Hall summarized a few of the inconsistencies educators see throughout the country. There needs to be a "fair deal for educators." Politically, at the federal and local level, education is said to be the first

priority, but funding education is not the first priority. Salary is merely the starting point in winning union support for year-round schooling. Other factors to be considered include teacher burnout and the lack of time available for teachers to continue taking courses. Mr. Hall noted that during the hearing there was no mention of the negative mental effects teachers experience when they feel they have not gotten a "fair shake from the school board or from their city." He said there is evidence showing that if we expect children to do well, they do well. We also have to expect teachers to feel well and be well when they enter the classroom.

Ms. Brinkley agreed with Mr. Hall's comments. She stressed the importance of showing unions and teachers that while the primary intention of reformers is the improvement of educational opportunities for children, at the same time "we are not trying to make a work horse out of you." Teachers need to know that their personal needs will be considered. Teachers are a part of the "total picture."

Ms. Byers expressed appreciation for the references to the professionalism of teachers and morale. She asked Ms. Brinkley how she would insure quality of time for students and how to examine it.

Ms. Brinkley thinks it is necessary for teachers to have opportunities to grow as teachers and to renew their skills. There also needs to be a way of reducing the non-teaching duties of teachers. She said it is necessary to help teachers allocate time in terms of the special needs of children since every child does not need the same amount of time on every subject.

Ms. Byers asked for views on the use of time of 4-year-olds. Ms. Brinkley responded by stating, "I am a strong believer in developmentally appropriate education and moving away from lock step." She wants to see programs that do not put children in compartments, but give them a chance to grow. Her school system currently employs promotion standards, but children who do not meet the standards after 180 days are not considered failures. Her staff has elected to extend the school days of those children by 6 weeks. Ms. Brinkley said this process lets children know their teachers understand that all students do not learn at the same rate. Ms. Brinkley concluded by stressing the importance of developing appropriate strategies for using the time of the 4-year-old.

Mr. Hall discussed the half-day prekindergarten programs the D.C. School Board began offering for 4-year-olds several years ago. The program worked so well that it was expanded to a full day prekindergarten city-wide. The cost was substantial and phased in since 1985. Currently, prekindergarten courses are offered throughout the city for 4-year-olds. The Board is now

experimenting with the Committee on Public Education in one section of the city to extend these programs to 3-year-olds. The prekindergarten program is structured so that students have a day which is made up of time where they learn socialization skills, appreciation of other cultures, and the IBM Writing to Read Program. This early childhood program has been a great success.

Mr. Hall said his organization believes that investment is more effective on the front end of education rather than at the twelfth grade level. If he had to make budget priorities and "hard" choices, Mr. Hall would spend the resources on a 4-year-old rather than continue to spend funds at the upper end of the educational process for the 16-year-old. He favors moving resources into the strongest possible early childhood programs, with a continuation of the programs. Mr. Hall also thinks there is a great opportunity for public-private partnerships at the secondary school level to replace some of the resources that have been taken away from education at the high school level.

Dr. Goldberg juxtaposed Mr. Walborn's experience of teenagers benefiting from working and developing skills through employment in the amusement park industry with Ms. Brinkley's concern for teenagers without employment opportunities during the summer. Mr. Walborn was asked to present some evidence that the adolescents who work for the various parks develop the skills previously mentioned.

Mr. Walborn said most of the evidence comes from watching the adolescents form good work habits. Many of the young workers are in the 15 and older age category. A large number of them return year after year throughout their high school years to work in the parks. It was also mentioned that quite a number of the young people decide to stay in the industry and obtain permanent jobs in the industry as a result of working as part-time employees.

Ms. Brinkley responded by stating her concern for the majority of the nation's children who live in the urban corridor. In that corridor, the children of the inner cities are involved in crime, and their drop-out rates are high. The kids in the inner cities are on the streets and not involved in jobs because they do not have the skills necessary to get many of these jobs. They could not get a job in an amusement park because many of them cannot read well enough to do the jobs. Moreover, many of the kids lack transportation to get to an amusement park.

Mr. Archibald added to the discussion by referring to the co-op programs for high school youngsters throughout Florida. The students engage in productive activities in an apprenticeship role and they attend the regular day school or a night school. These students receive useful training while accommodating the needs of the business sector. Mr. Archibald does not see some of

the proposals raised during the hearing as being incompatible. He thinks it is necessary for everyone to "shift our paradigm just a wee bit."

Chairman Jones exercised his prerogative to ask Mr. Archibald a question. The Chairman was interested in the measurements Mr. Archibald had referred to earlier. The question of effective measurements in connection with an extended school day continues to emerge in Commission meetings. The Chairman thinks it is necessary to identify "some other measurements that will be good for the American society, for the American workplace, and the American home."

Mr. Archibald elaborated on what he meant by effective measurements by citing an example that guides his thinking. A recent Florida survey that covered a broad cross section of the population looked at the issues that were deemed important--issues that schools, the school board, superintendents, and teachers ought to take up with respect to children. Nine issues surfaced including drug abuse, alcohol consumption, tobacco use, and violence in the schools, before the issues of reading and writing, or one of the core subject areas, were raised. This example suggests that in order for schools to meet "at least a partial expectation," it is necessary to devise some measurements that ascertain the extent to which we meet these expectations. Mr. Archibald thinks this assumes that one of the missions of schools is to continue to reflect what society says it wants from formal education.

A number of specific tools are available. In the southeastern section of the country, we will see the development of a system comparable to the agricultural extension system. This system stands in contrast to the pilot approach alluded to by an earlier panel.

Mr. Archibald thinks the extension approach might be more useful to school improvement initiatives than the pilot initiatives which, over the last 30 years, have never seemed to be adaptable to other situations. Extension activity, especially in agriculture, has clearly been generalized and has yielded interesting results.

Mr. Doyle asked Mr. Hall about the Cope Study, which recommended lengthening the school year in D.C. He asked if there is a newer set of recommendations from the Committee on Public Education and if the relationship with the Committee has been useful and fruitful.

Mr. Hall said he thought the Cope recommendations dealt with lengthening the school year and lengthening the school day. The school day has been lengthened in the district but at this time the school board is not looking at lengthening the school year.

The Cope Study included a number of recommendations, such as expansion of services to 3-year-olds. Some people believe 3-year-olds should be at home doing other things rather than being introduced to the educational system. This issue merits further study. Most of the attention to date has been given to implementing restructuring, down-sizing, and the financial recommendations from the Cope Committee; since most of these recommendations have now been implemented, the School Board is moving to the instructional recommendations.

Mr. Hall does not think the D.C. School Board has information indicating that a longer school year will lead to increased instruction. At this time, if he went to the teachers' union and talked about a longer day, he suspects he would have a "riot."

Mr. Shelton asked Mr. Archibald if he had specific data indicating that multi-track schools have raised student achievement. Mr. Archibald said there are specific pieces of research that provide evidence of improved learning for students, but there is no solid body of knowledge at this time. This is due to the history of the movement, which was driven by needs for increasing school capacity at a time--the late 1950's--when funding was short for school buildings. In the last several years, school systems, teachers, and parents have come to believe there is evidence supporting educational benefits of year-round education. Evidence can be obtained by looking at Brigham Young University's 1990 Statewide Evaluation of Year-Round and Extended Day Schools Study, the San Diego Sweetwater District, the Oxnard, California School District, and Buena Vista in Virginia. A few years ago, models for tracking the student achievement of 170,000 students in two school districts were put together in Florida.

Dr. James Bradford, Superintendent of Schools, Buena Vista, Virginia, presented his perspective on the difference he has seen in his system. There are myths and detractors, but facts show that the year-round schools have increased achievement in his schools and decreased the drop-out rate. Dr. Bradford said school size has nothing to do with year-round education, and facts show that year-round schools in a rural-industrial city attract industry and enhance learning opportunities for children at decreased costs. In a 400 person high school, year-round schooling can yield savings of over $2 million.

Buena Vista is an industrial community. The school buses of America are made there, and 18-year-old seniors are employable during the summer at a minimum of $7 plus per hour. Dr. Bradford indicated that some research is showing that students who work in the summer are using money for the "wrong reasons." Some children can have too much money, and use that money for cars, alcohol, and drugs.

In Buena Vista, school enrollment has consistently been over 50 percent. Since other school districts do not offer year-round schooling, students from as far away as Richmond attend Buena Vista. These students stay with a family relative in order to take advantage of the educational opportunity. Currently, students can complete one year of college while still in high school. Dr. Bradford said, "Our research is showing that by taking the children into the college setting in the junior and senior year, when they go to college, they have mastered the syllabus."

Although Dr. Bradford is not a proponent of the 200 day school year per se, there are 218 days in his system. He said the terms "year-round" and "extended" cannot be used in Virginia. In Virginia the extended school year is called summer school. The state funds two-thirds of the program while one-third comes from local funding.

Chairman Jones mentioned that Dr. Goldberg had asked him why the models like Buena Vista have not spread. The Chairman's answer referred to a comment given by Secretary Alexander that indicated the models are "too simple" and they "do not cost enough." Dr. Bradford agreed.

Before the conclusion of the morning session, Mr. Walborn told the Chairman that IAAPA has prepared a research paper filled with facts that are "totally contrary to what we have just heard." He asked the Commission to look at the report. The Chairman assured Mr. Walborn that the purpose of the hearing was to listen to divergent views.

THIRD PANEL DISCUSSION

Dr. Harold Stevenson, Professor of Developmental Psychology, University of Michigan.

Dr. Stevenson and his colleagues have been collecting data from 6 large studies of school children in the United States, Japan, Mainland China, and Taiwan, since 1980. The cultures they have chosen to study contrast with the United States in that they always produce students who do very well in international comparisons. Chinese students or Japanese students inevitably do very well in science, math, and related topics. Since nationwide sampling was not feasible in terms of finances or logistics, the researchers selected what they considered to be prototypic metropolitan areas as the locales for their studies: Minneapolis and Chicago in the United States; Taipei, Taiwan; Beijing, Mainland China; and Sendai, Japan. Stevenson and his colleagues selected a representative sample of the full range of schools within each city, including average schools, some of the city's best schools, and some that were considered to be among the least effective. Concentrating their attention on

kindergarten, first, fifth, and seventh grades, the researchers looked at characteristics of school and characteristics of daily life for students in order to learn which characteristics are important for high levels of student achievement.

Dr. Stevenson thinks that, despite the scarcity of good information, the Asian example has often been used to justify arguments for a longer school day and a longer school year in the United States. He said, "I think that what we have are a plethora of impressions. What we have lacked is data...where people have gone in and systematically and objectively tried to study what goes on in these various cultures...[T]hat is what we have tried to do from a psychological point of view." Stevenson and his colleagues have tested children's academic achievement, and have done extensive observations in classrooms. This type of research is necessary to gain insights into what happens in the school. The researchers have also interviewed many parents about their practices and their estimates of what their children accomplish.

Stevenson said that the research community does not have good information about the length of the school day or the length of the school year in Asia. "Although the students [in Asia] are at school longer than they are in the United States, it does not necessarily mean that they are spending their time on academic subjects, or the kinds of things that the school presumably is directly responsible for." Comparisons of the school year in Asia and the United States often include the statistic 240 days versus 180 days; this comparison, however, is misleading. The "240" days in Asia include Saturdays, which are not a full day. Moreover, Asian schools use 10-20 days a year for excursions. Statistics on the length of the school day are also misleading. What is not included in those is the fact that Asian children spend 50 minutes a day in recess and U.S. children spend 10 minutes a day in recess. Also, our students are allowed 20-30 minutes for lunch in the elementary school while children in Asia are allowed 1 hour to 1.5 hours.

A third item that is never considered in the length of the school day, in terms of academic programs, is the difference in after-school programs. The Asian system includes very extensive after-school programs where students engage in everything from martial arts to botany (subjects that are not in the regular class activities).

According to Dr. Stevenson, time-sampling and narrative observation have produced interesting information about the time use in schools of the United States. In time-sampling, observers see whether certain activities are occurring at a particular time. Narrative observers write down everything that is done in the classroom and analyze it afterwards. Researchers have found big differences among nations in the amount of time that is spent

on academic activities in the school day. In the United States, first grade students spend only about 70 percent of their school time on academic activities. The corresponding percentage for the sixth grade is only 64 percent, compared with 80 percent in Asia.

In the United States, children are in school about 30 hours a week. The teacher has been judged to be imparting information about 20 percent of the time that the child is in school. Dr. Stevenson reported, "If you multiply those out, you come up with a figure of about six hours a week that the child in America is receiving information imparted from the teacher that is relevant to the classes that they are in." In Asia a much higher percentage of time is spent imparting information to the students. When there is talk about extending the school day, it is therefore necessary to begin by asking about the way time is being deployed at present.

Dr. Stevenson's work also indicates that American students in Minneapolis and Cook County spend a lot of time in seat work. Hundreds of hours of observation reveal that 40 percent of the time the students are in class is spent in seat work, which comes primarily at the end of the period. A student is given an assignment and he or she works on it alone, without intervention by the teacher. Because the seat work usually comes at the end of the period, the student often receives no feedback from the teacher. One reason for this is that our teachers are required to teach many more hours a day than the teachers in Asia. The teachers in China only teach 2 or 3 hours a day, so they do not have to use seat work as a means of "getting away" from the class. Seat work in Asia is used more effectively than in the United States. In Asia the seat work comes in short bursts. The teacher presents part of the lesson and then has the students practice. This is followed by an evaluation. The sequence is repeated a number of times.

There are other issues that affect how time is spent. We have not taught routines to our students. American fifth graders take 10 percent of their time in school moving from one activity to another. They have not learned how to move through time by getting materials for one subject out and putting away the materials for another subject. The Asian students spend less time in transition. Inefficiency in the use of time for American students was observed in 45 percent of the classes in Chicago classrooms. Interruptions broke up the continuity of the class, or there were intervals without instruction.

Observers have found that students in the United States are attentive to the teacher only about 60 percent of the time. This is because the students often are doing seat work and irrelevant activities, and the teacher is not involved. In the Asian

classroom, in contrast, the students are attentive to the teacher about 80 percent of the time.

Dr. Stevenson also briefly discussed effective teaching practices such as making lessons meaningful, using concrete materials before getting into abstractions, getting children to verbalize, etc. He said there is less frequent utilization of these techniques in American classrooms than the current Asian classrooms.

In addition, other elements are related to the school activities and how students use their time outside of school. Students in the United States have two kinds of conflicts which students in other parts of the world do not have: working and dating. A large percentage of our high school students date. This is unusual in other countries. American students have a set of goals which are much more complex and diffuse than the goals in other countries. While this difference is something we will not change, it does help to explain how our students use their time and why that use differs from the pattern in other countries.

Dr. Stevenson concluded his remarks by explaining that every discussion of the use of time points to the excessive amount of time students watch television. Again, the statistics can be misleading and must be studied carefully. American students rather consistently watch less television than students in Japan, yet Japanese students are doing better in school. One explanation is that television is watched differently. Japanese students watch television after they do their school work, not while they are working. This example underscores the importance of gathering data to support or challenge our assumptions about Asian students.

Dr. Jeanne Griffith, Associate Commissioner for Data Development, National Center for Education Statistics

Dr. Jeanne Griffith focused her remarks on three aspects of the state of knowledge of children's time use in America. They were:

(1) The necessity of distinguishing quantity and quality of time use,

(2) What has been learned from studies on time and learning, and

(3) Issues we need to know more about when considering time and learning.

Dr. Griffith indicated that past studies have focused either on the amount of time children spend engaged in various

activities or on the number of activities they engage in over a specified amount of time. These studies have not reflected the complexity of time use. Dr. Griffith said, "They haven't enhanced our understanding of quality as well as quantity of time spent, and I think that Harold Stevenson's remarks certainly reflect on that and lead us into thinking more about that." A major point that Dr. Griffith emphasized is that neither accounting for the amount of time nor enumerating lists of activities engaged in during a day tells us very much about the use and value of children's time. She thinks there are at least as many anomalous findings about time use as there are findings that confirm our basic preconceptions about how time should influence student performance.

The case of television watching provides a good example of anomalous research findings. We know that an equal percentage of students in Israel and the United States, about 20 percent, spend 5 or more hours a day watching television. In Scotland, nearly a quarter of students spend that much time. And yet both Scottish and Israeli students perform significantly and substantially better than American students on mathematics assessment. Anecdotal evidence suggests that the quality of programming is at least as important as the amount of time children spend sitting in front of the television.

What can we learn from existing studies on time and learning? There are only a few large scale studies that address students' and teachers' use of time in school and children's use outside of school. In almost all cases, the studies of time and its effect on academic achievement are limited to listing either amounts of time or kinds of activities. Moreover, very few studies try to relate how children spend their time out of school to how they perform academically in school.

The National Assessment of Educational Progress (NAEP) regularly gathers information about how much time children spend watching television and how much time they spend doing homework. NAEP merely gathers aggregate data, asking children how much time they spend on and what time of day they engage in specific activities.

Dr. Griffith thinks the NAEP data have serious limitations. Aggregate estimates are useful, but they do not go far enough to give us the information we need. Nor do they tend to match other studies that have been conducted, such as using diaries for children to see how much time they actually spend in various kinds of activities. For example, it is difficult for a child to think about how much time is spent watching television. If someone asked an adult about the average amount of time he or she spends in a day on the telephone, the answer given would probably be different from the number a researcher would obtain if the

subject of the experiment were tracked by a beeper and clocked each time the phone was used.

In planning for the Third International Mathematics and Science Study, which will probably be conducted in 1994, more attention is being paid to the notion of the use of time, at least with respect to the concept of opportunity to learn. Dr. Griffith hopes that this study will reflect important advances in the state of the art in survey collection of time use information.

Dr. Griffith pointed out that smaller scale studies can contribute to our understanding of the interplay between policy and time use and student performance. Charles Greenwood conducted a study of at-risk students in Chapter 1 programs in which he compared three groups of children in terms of the time that they actually spent in learning activities. The time that they spent in learning activities was a function of the time that they were actually offered instruction and the time that students were actually academically engaged.

Dr. Greenwood's three groups of children included an experimental group of low socioeconomic status (SES) children who were given an intervention to try to improve their time spent learning; a second group of low SES children who were given no intervention but served as a control group; and a comparison group of high SES children. Greenwood found that the intervention was highly effective. Some things could be done to greatly improve the time children spend learning.

An interesting lesson might be drawn from Greenwood's findings. He notes that all the schools in his study were from a district with uniform policies concerning daily schedules and time allocations for instruction. Thus, the difference in time spent learning between the high SES comparison group children and the low SES control group appears not to result from policies that attempt to mandate the spending of more time, but rather on the explicit intervention (for the experimental group) and on factors about the students in the comparison group (high SES, greater initial academic skills, no classroom disruption because of Chapter 1 pull-outs, etc.). We might also speculate that we have something of the phenomenon of high expectations at work here. Teachers governed by the same time use policies are providing substantially different experiences in that time to children from different backgrounds.

Dr. Griffith feels that studies such as Greenwood's show us the complexity of the policy issues embedded in discussions of time and learning. We can mandate that teachers should spend more time giving direct instruction and that children should do more homework. We can request that parents spend more time engaged in school related activities. Unless we ask deeper

questions about the quality of that time, however, the policies may not gain us very much.

Dr. Griffith closed her remarks by saying that, "...merely amassing data about the amounts of time we spend on activities or listing types of activities participated in does not address the kinds of questions that we need to pursue. We need studies that attempt to explore specific actions to improve the use of time, and we need studies that reflect carefully constructed interventions designed to test different strategies for improving the use of time."

Dr. Nancy Mead, Director, International Assessment of Educational Progress, Educational Testing Service.

Dr. Mead reported on data from the second International Assessment of Educational Progress (IAEP), an international comparative study of mathematics and science achievement of 13-year-olds in 20 different countries. A number of the participating countries also assessed 9-year-olds in the same subjects. The assessments were conducted in March 1991 and published in two reports--"Learning Mathematics" and "Learning Science" (February 1992).

The primary focus of the study was to collect achievement data. Seventy cognitive test questions or items were administered in each of the subject areas at each age level. Each assessment contained a range of the questions that measured achievement of objectives that were developed collaboratively by the 20 participating countries.

Because it is instructive to policy makers and educators to interpret achievement results in context, the IAEP developed three separate background questionnaires, including one for the student, the school, and the country. These included various questions about resources within the school and at home, curricular emphasis, and instructional practices, as well as other school and non-school factors that may influence learning. In addition, a limited number of subject-specific background questions asked students for information about the mathematics and science instruction they received. Responses to these background questions and their relationship to achievement on the cognitive tests may shed some light on the issue of time and learning.

The task of reporting the results of achievement from 20 countries as diverse as China, the former Soviet Union, the United States, Switzerland, Israel, Brazil, and Mozambique was a challenge and an opportunity. Because it only makes sense to interpret the academic performance of such a varied group of populations within the educational and cultural contexts of each participant, achievement data were reported, together with

descriptive information about the curriculum, classroom, home environments, and the country characteristics of each participant.

Of particular relevance to the work of this Commission are some of the data in the area of educational systems and classrooms that relate to length of the school year, length of the school day, minutes of mathematics and science instruction, and amount of homework, both in general and in these two subject areas.

While it would have been satisfying to see some clear distinctions between high- and low-performing countries, the data rarely suggested a universal answer to the question of which factors contribute to effective schooling and high performance. While consistent relationships between certain characteristics and achievement were noted in a majority of populations, counter examples were almost always present. Factors that impact academic performance interact in complex ways and operated differently in different cultures and educational systems.

In each of the charts, countries are listed in two groups: comprehensive populations, which represent at least 90 percent of the 13-year-olds in the defined population, and populations with exclusions or low participation. Within each group, populations are listed in order of average mathematics and science achievement, from highest to lowest performing.

If you look down the column that shows the number of days in the school year, either on the mathematics chart or on the science chart, you see that several high performing populations--Korea, Taiwan, and Switzerland--also have long school years, over 200 days. However, Hungary, a high achiever in both subjects, has one of the shortest school years, 177 days. Also, consider China, with an extremely long school year of 251 days. Chinese 13-year-olds are among the highest performers in mathematics, but only about average in science. Clearly, the priorities assigned to the various subject areas make a difference. The United States has a relatively short school year in comparison to the other participants, and our students performed lower than most of their peers in Canada and in the participating European and Asian countries.

It is instructional to study the chart vertically as well as horizontally. This examination reinforces the notion that there is no single formula for success in education and approaches differ from country to country. Consider Korea and Taiwan, two top performers in mathematics and science with fairly similar background characteristics. Both are relatively poor countries with a long school year (over 200 days), and Taiwan also has a long school day (318 minutes). The actual minutes devoted to mathematics and science instruction are relatively high in Taiwan

(251 and 245 minutes, respectively), but relatively low in Korea (209 and 144 minutes, respectively). Class sizes in both countries are large, averaging over 40 students, and these classes are usually taught by someone who teaches mathematics or science all or most of the time. Relatively high percentages of students in both countries report doing a lot of homework in general and in the areas of mathematics and science specifically. A number of these characteristics might suggest reasons for high levels of success.

Switzerland, another high achiever in mathematics and science, provides a contrast. Here also there are factors that might explain top performance; however, the pattern of background variables is quite different. Switzerland is a small, wealthy country. Its school year and school day are quite long (207 days and 305 minutes, respectively), and the average minutes of mathematics instruction are quite high, 251 minutes per week, while the average for science instruction is much lower, 152 minutes per week. Class sizes are small, averaging less than 20 students, but classes are taught by a teacher who is responsible for a full range of subjects, not just mathematics or science. Students do not report spending much time doing homework in mathematics, science, or across all school subjects. The focus in Switzerland appears to be on in-school activity, not outside reinforcement.

The profile of the United States includes some of the same characteristics as these high performing countries, yet our students are among the lowest achieving comprehensive populations. The U.S. is a wealthy country, with substantial resources directed toward education. The length of the school year is relatively short (178 days), but the length of the school day is relatively long (338 minutes). The amount of time spent on mathematics and science instruction is relatively high, 235 and 233 minutes per week, respectively. Class sizes are relatively small, averaging 23 students, and mathematics and science are usually taught by teachers who teach these subjects all or most of their time. In comparison to other countries, few students spend a lot of time on homework in mathematics, science, and other school subjects. Relatively large percentages of students spend considerable time watching television.

What then makes the difference? One factor suggested by the IAEP data is the nature of the curriculum. In mathematics, high achieving countries were more likely to focus on geometry and algebra than low achieving countries. Other factors that are more difficult to capture in survey research may also contribute. Anecdotal evidence gathered in the course of the study suggests that students in high performing countries take their schooling more seriously and are more motivated to achieve.

What implications does the IAEP present for public policy? Probably one of the most important findings for the United States, which now is considering establishing national standards in education, is that in some countries large percentages of 13-year-olds are able to demonstrate high levels of achievement in mathematics and science. In the face of yet additional evidence that many of our own students fail to obtain high marks, we may be tempted to set our sights at modest improvement. Dr. Mead thinks the results suggest that this might be a disservice to United States students. In many ways, the U.S. education systems and classrooms have the tools they need for success. The nation needs to find appropriate ways within its culture to focus time on appropriate content, with serious effort.

THIRD PANEL QUESTION AND ANSWER PERIOD

Mr. Walker asked the panel members to address specific teaching methods that are being used in other cultures that might be better than ones being used in the United States. He asked if teachers in other cultures were receiving better training or if they are more educated in their particular subject matter.

Dr. Griffith responded by taking the opportunity to include a story she had not presented earlier. Lois Peak wrote a book called, "Learning to Go to School in Japan." This book includes a story about a Japanese elementary school principal who instructs parents of prekindergarten children to sit them down in a spot daily and tell them the spot is their place to study. Each day the children are to be given a piece of paper and told to write their name 10 times. That is all they are supposed to do. The parents keep the papers in a folder for 6-9 months. Shortly before the beginning of school, the parents review the work and the progress with the children. The simple task of writing a name down 10 times has taught the child that study is a regular habitual matter. It takes place at a certain time and in a definite setting every day. The child also learns that study has an effect on his or her mastery of the subject matter.

Japanese children learn to learn early in their schooling career. In the United States we want our children to be ready to start school, but we do not think about the process of teaching them to go to school.

Joyce Epstein has done a number of studies in Baltimore on teaching parents how to help their children to learn. Such studies are very instructive. There are many parents who want very badly to be able to help their children, but they do not know how. When schools reach out to these kinds of parents and present 3 or 4 simple things that can be done with the children to support learning, it makes an enormous difference.

Dr. Stevenson discussed teachers in China and the United States. When he was in China and asked teachers about their teaching schedules, they in turn wanted to know about American teachers and how much they taught every day. Dr. Stevenson explained that American teachers have little time for preparation and spend most of their time at school in front of the class. The Chinese teachers were absolutely aghast. They could not believe this was true. He asked the Chinese teachers, "Well, what do you do?" They said, "Well, we teach two or three hours a day. The rest of the time is available for preparation or for correcting papers, for working with individual children, for getting together all the teachers of a particular grade."

One of the problems of American teachers is that they simply do not have time to prepare finely developed, carefully thought out lessons. Japanese or Chinese teachers may spend a whole morning figuring out what questions to ask to drive home a particular lesson. One physics group that Stevenson watched spent half a day for about three days working with all the school's physics teachers on a laboratory demonstration they were going to use.

Dr. Stevenson was emphatic about the importance of allowing teachers the time necessary for preparing what they are to teach. He does not see meaningful reform without such time for preparation. In Chicago, only 14 percent of the teachers he researched had fewer than four classes to prepare for every day. Stevenson said, "I think that it is practically impossible to do those in a well-developed way."

This past fall, when Stevenson went back to China, he wanted to verify his information regarding teachers' schedules. The teachers confirmed Stevenson's earlier findings. They added that new teachers are given all the mentoring and support necessary to propel them into a good career. Sometimes a new teacher is asked to teach only one hour a day so as to allow time for mentoring.

Differences between the United States and Asia also exist in the area of teacher preparation. In China many of the teachers are only high school graduates. In Taiwan, until very recently, many were only graduates of upper middle school, which is high school and one year of college. The whole process of learning how to be a teacher occurs after that. College is used to attain substantive knowledge in mathematics or physics, or whatever will be the field of instruction, and to take some courses in basic didactics. The process of mentoring after new teachers enter the field, however, is a much more professional process in Asia than we have in the United States (where there is very little development after teachers reach the school). In Japan, each new teacher is assigned 20 hours of a senior teacher's time. The senior teacher will visit the new teacher's classroom, observe the teacher, and discuss with the new teacher the strengths and

weaknesses of the lesson. The Asian approach to teaching is similar to the approach in medicine. A person learns medicine by watching skilled practitioners and gradually being introduced into the practice itself. Many American teachers have MA's but lack this practice and opportunity.

Dr. Mead said the IAEP study did not focus on teaching in any depth. However, she has noted from her personal experience some of the same things that Dr. Stevenson was talking about in Asia. She has not heard the same stories from European countries. She added that IAEP data and national data indicate elementary teachers lack confidence in their mathematics and science abilities. Dr. Mead thinks it is because the teachers are the product of the same school system that created the students that are not doing very well internationally. The teachers are not getting much academic training in mathematics and science after they leave the elementary and secondary system. Dr. Mead said, "...some of it may be just self-perpetuating."

Mr. Cross asked Dr. Stevenson about the question of teacher class size or teacher load. He said, "If you look at the cost of education in the United States and Japan, it is not very dissimilar. Relatively speaking, it's in the $5,000 range on an average. It seems to me that there's a bargain that's been entered into in this country that's very different from Japan, that is, that in this country the push is to lower class sizes and that results in the teachers teaching more classes. In Japan, it seems--and this may be true in some of the other countries like Taiwan--that it's the reverse. There are larger classes, but the teachers teach fewer hours, and the result is that the cost equation comes out about the same. And I wonder what your view is of that and whether you have any observations on this."

Dr. Stevenson pointed out a paradox: because of their lighter schedules, Asian teachers actually have more opportunity to work individually with children who are having problems. American teachers say they want smaller classes because they are so overburdened, but the real issue is their teaching schedule, not the number of children in their classroom. Another difference in Asia is that a teacher may be with the same children for two to six years, and the children and teacher develop a real relationship with each other. The Asian teachers wanted to know why we in the United States change our group every year and change our teacher every year. Dr. Stevenson could not offer an explanation to the Asian teachers.

Mr. Cross asked Dr. Griffith if the OECD data will include any reflections on class size, teaching load, and items of that nature. Dr. Griffith said that information about average class size would be included. Dr. Griffith explained that the report will be used in September on International Education Indicators

that has been coordinated by the Organization for Economic Cooperation and Development. There will be some interesting information that relates to time on task.

Mr. Cross asked the panel members to comment on incentives and motivation as a factor in performance. Mr. Cross referred to Dr. Stevenson's studies in Japan and other Asian countries and the link between education, future performance, and success in life.

Dr. Stevenson noted that differences exist between the Japanese and Asian cultures and the American culture. The Japanese and Asians emphasize education and have a clear mission for students from elementary through secondary school. When children in China were asked what they would want if a wizard could give them anything, 50 percent of the children spontaneously mentioned education, while only 10 percent of the children in the United States mentioned education. This indicates that there is a big difference about what is transmitted to children concerning the value of education.

The second factor is that in the United States there are varied goals for children. Our students are supposed to be popular, good in athletics, have jobs, go out on dates, and be good in school. In Asia and some other countries there is a very clear set of expectations for students; they will be diligent in their school work. In a recent study over 1,000 adolescents were asked about stress and depression. The group that was the highest in mentioning the frequency of stress was American 11th graders. They said they were stressed about school. Dr. Stevenson said, "I thought it would have been about other kinds of things in their life." He added, "...I don't think we have the clarity of goals for students that they have in other countries."

Dr. Griffith was in accord with Dr. Stevenson's views. There is a serious problem in the United States in terms of support for education--learning, more generally, is a problem in society. It is reflected in the international assessments in ways that are quite insidious. There is not only the issue of motivation for learning, but also an issue of motivation for testing. Dr. Griffith added that there is insufficient information about the degree of effort students put forth in taking tests. If American students are taking international assessments and do not feel it to be important to show up for the tests, or to work very hard when they are taking them, they are not going to perform well. Dr. Griffith said, "We do not have any data to support that; we simply have anecdotal evidence that in other countries they take this a lot more seriously."

Dr. Mead agreed that there are anecdotes but no hard data. In Korea, when 20 children being observed in quality control were

taken out of the room as an age sample, they were cheered by the other students. This would not happen in the United States. The Korean children were viewed as doing a good job for their country.

IAEP asked a question of its coordinators that was not reported in the official results. In each country, the coordinators were asked to rank in order the most revered professionals of their country. Some countries (including the United States) put the TV personalities and sports heroes up high while a number of Asian countries identified philosophers and scholars. This reflects real differences in terms of motivation. There are cultures where education is a deep tradition and this fosters achievement; these cultures have a long history of valuing intellectural endeavors.

Ms. Byers wanted to know about disadvantaged students and compensatory education. She asked if there are Chapter 1 pull-out programs in Asian elementary schools.

Dr. Stevenson explained that the goal in Japan's elementary schools is egalitarianism. Everything is done in order for every child to have the same set of experiences. In high school it is different; there is a hierarchy. The students who are having difficulties are the ones who will not be going to college; they are pulled out and put in different high schools from those who are at a high level.

It is slightly different in China today. There is actually pulling out of some students to do special classes in mathematics. Dr. Stevenson noted that the last year the Chinese students are expected to be number one in mathematics in the world, but basically, there is no tracking within classes or between classes.

Dr. Griffith mentioned a quick point relating to tracking: "I frequently hear that the United States performs poorly and we have tracking; people make an association between tracking and our performance." The nature of tracking is quite different in different countries, but all countries have some method of dealing with students of widely different levels of ability. In many other countries it takes the form of "streaming", students are put into an entirely different school. Within a school it may appear that there are students of all levels of ability in the same classes, in other words no tracking, but there is streaming to different schools for different kinds of students. Dr. Griffith thinks it is important to keep this situation in mind with regard to tracking issues.

Dr. Shelton referred to Dr. Griffith's prepared remarks: "You quote Bell speaking about the role of education being to preserve freedom, advance prosperity, provide equality of

opportunity to all citizens, and ensure that this nation has the intellectual capacity to lead the free world. If you looked at the 20 countries in your study--if we went back to your city and said the role of education is--what would be the responses there (not the expectation of students, but the role of education or the role of schools)? We have heard here about preserving freedom, advancing prosperity, assuring equality, and doing everything else that can possibly be done. What are the expectations of the schools in those other countries?"

Dr. Stevenson responded, "It seems to me, to produce good citizens who are motivated to learn."

Dr. Mead added, "I don't think you would get the same words from each country. We actually did ask them to prioritize those kinds of things. But I think it would come down to those in general. They could all be generally characterized under those characteristics. They aren't all narrow. I don't ever get a sense that these countries have narrow goals." Dr. Mead noted that Ireland is an exception; it has a goal to teach Irish so that Ireland will survive.

Dr. Shelton commented that we expect our schools to do more than teach science and math. There is instruction in everything from fire drills to AIDS education. Dr. Shelton wanted to know if we are failing to teach science and math, or if we are failing on a broader scale.

Dr. Stevenson responded by saying we are failing on a broader scale. He compared American schools to schools in Amsterdam where athletics and music lessons are private and not part of public education. Dr. Stevenson added that in Asian schools there is no instruction about fire prevention.

Dr. Goldberg asked Dr. Stevenson if changes in teacher behavior might improve conditions in American classrooms. Dr. Goldberg specifically wanted to know if teacher behavior would change if teachers were made aware of the research data and if these data were made available to them.

Dr. Goldberg also asked the panelists what would be required to get the kinds of changes in behaviors that have been discussed.

Dr. Stevenson said he believes there would be enormous improvements if teachers were given opportunities to continue their education.

Dr. Goldberg concluded his questioning by asking if the answer is to change the opportunities for teachers to grow and develop.

Dr. Stevenson agreed with Dr. Goldberg.

Mr. Doyle asked Dr. Griffith to explain the differences between the time diaries and the self-reported data and state which is more reliable.

Dr. Griffith thinks time diaries are more reliable and give clear information. Time diaries suggest that children are spending far less time watching television than the aggregate numbers would suggest. Dr. Griffith explained that when you ask a child how many hours a day he or she watches television, you do not know whether the answer reflects the number of hours the television is on in the house, or the number of hours the child is sitting directly in front of the television, watching it and doing nothing else.

Mr. Doyle referred to Dr. Stevenson's description of the typical Japanese youngsters who are enrolled in school for 240-280 days a year. They have music, arts, literature, language, and history (about the same as American youngsters). But, the Japanese students seem to have a "richer and more varied set of activities." Mr. Doyle commented that it would be difficult to measure the "spillover effect." He wanted to know if there are American data that would permit us to study middle and upper middle class American students who are "similarly treated," even though the training does not occur in the school setting. Mr. Doyle also asked if it is possible to calculate whether the American students are doing as well as the Japanese students.

Dr. Stevenson said American mothers have been asked questions about lessons, activities, and special tutoring of their children. The American family stands out in the attention given to the preschool child; American parents go on various outings, read to the child, and do a number of other activities that are helpful to education. When the American child enters school, the mothers "turn over" the child to the school and the parental attentiveness drops off. If you ask a question about what they know in terms of common knowledge, American 5-year-olds do very well. The Chinese 5-year-olds really do not know very much. Their mothers do not take them on excursions or read to them. The Japanese children are in between.

Dr. Griffith said there is some information from the National Educational Longitudinal Studies about the kinds of activities that children engage in outside of school. It includes something about the children's background and parental involvement in these kinds of activities, but the information does not permit provide an international comparison.

Mr. Higgins asked how the tracking system in the United States compared to curriculums in China and Japan. Mr. Higgins wanted to know if students in China, Japan, and other countries have greater access to algebra-based mathematics programs, geometry, chemistry and physics than students in the United States. Mr. Higgins asked the panelists to comment on any research that might indicate if American students have a fair opportunity from the point of view of curriculum , when they take international tests.

Dr. Griffith said, "...some of the studies have tried to tease that [information] out in terms of, if you are testing children in eighth grade or 13-year-olds, exactly what they have been exposed to." There is an article in the June "Educational Researcher" by E. Westbury that compares the achievement of American and Japanese students. The Japanese students are compared to American students who have had algebra by the time they take the test. Westbury finds a comparison of the mathematics performance of those two groups of children much more favorable comparison than a simple comparions of the overall population.

Dr. Griffith said she thinks there is a serious problem when comparing students who have had the exposure. There are two aspects to the question. One is whether or not students have the exposure and how they perform. The other aspect is whether the system is asking the most out of these children, and should they be given the exposure. Dr. Griffith thinks this is at least as important a question as the first question. If the students are performing, there is nothing inherently a problem with our students; if it is simply the case that they are not being challenged to learn the subject matter.

Dr. Stevenson said his colleagues recently did an analysis of the students of Taiwan where there is the hierarchy of high schools, vocational high schools, technical high schools, and regular high schools. On the basis of 1,500 students in mathematics, there is a distribution that has two peaks instead of a regular distribution. The ones in the upper peak are the ones in the regular high school, and the ones below are in the vocational high schools. When these math scores were compared to the American scores, the regular high schools were way above the American students, but even the ones in the vocational high schools were above the average of the American students.

Mr. Higgins asked if the students in the other track (in the schools in China) had access to algebra, chemistry, and courses of that nature.

Dr. Stevenson said they have math. There is information about the courses they have taken, but he did not have the information with him.

Chairman Jones brought the hearing to close by thanking the panel members for attending the hearing and expressing his gratitude for their expertise. Considering that the Commission has less than two years to make a report on time and learning to the Congress, the Chairman asked for final thoughts and recommendations from Dr. Stevenson, Dr. Griffith, and Dr. Mead.

Dr. Stevenson responded by saying, "...it's not time which is the critical question, it's how time is used. And until we know more about the quality of time, as Jeanne Griffith has said, we can't answer the question meaningfully. Just mechanically extending the school day or mechanically extending the school year is not going to accomplish what we think is best for students."

Dr. Mead added, "...you have to consider that within the United States context and what we would choose to do to make improvements, not what another country would choose to do. We have to think about what will work in our system."

Dr. Griffith said, "You have to make many recommendations that will be very substantive and will say exactly what policies or what kinds of activities you would like to see happen. I would like to see you also think about the long term need for information in this area...."